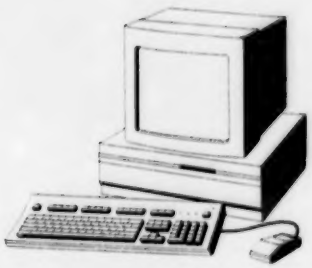
Information Economy Initiative: Schools Component

PROJECT OVERVIEW



DEPARTMENT OF EDUCATION AND CULTURE
NOVA SCOTIA
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SUMMARY

The Information Economy Initiative announced on May 29, 1998 is a $65 million project, the single largest information technology investment in Nova Scotia history. The three-year project provides information technology hardware, software, technical support and professional development for schools, universities and communities across Nova Scotia. It is an investment in Nova Scotia's young people and communities. The result will be a stronger economy and workforce, enriching student learning, attracting investment, and connecting communities across Nova Scotia.

The project represents a collaboration of the Department of Education and Culture and the Technology and Science Secretariat with the Atlantic Canada Opportunities Agency and Department of Economic Development and Tourism (both through the COOPERATION Agreement on Economic Diversification), Industry Canada, Human Resources Development Canada, school boards, universities, the private sector and communities

The *Schools Component* of the IEI is a $38 million initiative involving the installation of information technology (IT) infrastructure including 6,000 computers and local area networks in more than 150 secondary schools located across the province. In addition, infrastructure support will be provided to schools not currently connected to Internet to ensure that 100% of schools in Nova Scotia are connected by early 1999. As a key component of the project, secondary schools will provide public access to the equipment and to Internet. This will involve the development of partnerships with community organizations to use the IT infrastructure installed in schools to support the business community and the broader public.

Within the school community, the new technology infrastructure will be used in conjunction with the Department's *Vision for the Use of Information Technologies Within the Nova Scotia Public School Program* which specifies student outcomes related to information technology. This will ensure that students develop the information technology competencies that they require as they move into the workforce and continue with postsecondary education. Technology based learning resources that support the curriculum will be produced and teachers will be provided professional development in the use of information technology so that they can support both student and community use of IT.

Within the broader community, local business will be supported by greatly increased access to new workers with IT skills, by training courses related to developing the business potential of information technology, and by access to business related information on the Internet. Public access to government information will be enhanced by using the school based centres to extend the reach of the Department of Business and Community Services access centres to at least 100 sites across the province. In addition, the public will be supported by increased access to adult education and training opportunities.

PROJECT BACKGROUND

Canada currently controls 3% of the $1.9 trillion world market activity in information technology and communications. This market has grown at approximately 11% per year from 1990 to 1995 with a projected world market of $10 trillion by the year 2010. But, there is a serious problem looming. Larry O'Brien, president of Calian Technology Limited and member of the federal Advisory Council on Science and Technology told the Canadian Club in Ottawa recently that over 20,000 jobs in the information technology and telecommunications industry are being filled by employees recruited from outside the country. About one quarter of the firms in the Canadian IT industry report having too few skilled workers. (The Bulletin and The Progress Enterprise, Nov. 26, 1997)

The need for education to address this problem is forcefully put by the Software Human Resource Council (Canada) in their 1997 publication, *National IT Education Support: From Rhetoric to Action to Impact.*

> *It is the role of educators to prepare our youth for the future. Knowledge-based industry is the future for Canada...the world. Industry must work with all sectors of education to create partnerships, which foster the skill sets necessary to participate in this "new knowledge-based economy". To be able to adequately address the challenge of preparing our students for the new economy, information technology must become an every day part of our country's classrooms.*
>
> *If Canadian students are to receive a true understanding of the potential and the impact of technology for all aspects of life, then, information technology can no longer rest within the bounds of computer studies, but must be integrated into the very core of our educational system. A foundation must be prepared which can be built upon in post-secondary institutions.*

This emphasis is well placed when one considers that the ITC industries currently employ about 400,000 people in Canada. That represents more workers than in the banking, mining, forestry, and auto assembly industries combined. The need to urgently address this issue in the school system and in our communities is finally being recognized. In the recent Throne Speech, the Federal Government's commitment was expressed as follows.

> *We will make information and knowledge infrastructure accessible to all Canadians by the year 2000, thereby making Canada the most connected nation in the world. This will provide individuals, schools, small and large businesses, rural and Aboriginal communities, public institutions, and all levels of government with new opportunities for learning.*

interacting, transacting business and developing their social and economic potential...

A connected nation is more than wires, cables and computers. It is a nation in which citizens have access to the skills and knowledge they need to benefit from Canada's rapidly changing knowledge and information infrastructure.

This need is echoed in the Nova Scotia Economic Diversification Agreement which has identified the move to a knowledge-based economy as a key goal. To support that, one of the nine sectors identified which show economic promise for future prosperity in Nova Scotia is information technology and communications (ITC). This emphasis is not misplaced. All indicators are that Canada and Nova Scotia's economic future depends on the ability to develop competent knowledge workers who can compete in a global market place. Indeed, information technology provides unparalled opportunities for Nova Scotians to work from rural areas and compete effectively.

PROJECT DESCRIPTION

This initiative will fund the installation of information technology (IT) infrastructure including 6,000 computers and local area networks in more than 150 secondary schools located across the province. In addition, infrastructure support will be provided to schools not currently connected to Internet to ensure that 100% of schools in Nova Scotia are connected by early 1999. As a key component of the project, secondary schools will provide public access to the equipment and to Internet for community development activities. This will involve the development of partnerships with community organizations to use the IT infrastructure installed in schools to support the business community and the broader public.

Local business will be supported by greatly increased access to new workers with IT skills, by training courses related to developing the business potential of information technology, and by access to business related information on the Internet. Public access to government information will be enhanced by using the school based centres to extend the reach of the Department of Business and Community Services access centres to 100 sites across the province. In addition, the public will be supported by increased access to adult education and training opportunities.

Within the school community, the new technology infrastructure will be used in conjunction with the Department's *Vision for the Use of Information Technologies Within the Nova Scotia Public School Program* which specifies student outcomes related to information technology. This will ensure that students develop the information technology competencies that they require as they move into the workforce and continue with postsecondary education. Technology based learning resources that support the curriculum will be produced and teachers will be provided professional

development in the use of information technology so that they can support both student and community use of IT.

School Selection: The Department of Education and Culture will work with school boards to plan the implementation within each region and how the more than $20 million allocated for IT equipment and software will be allocated. Each school board will develop a plan to sequence schools on the project. This is to take into consideration the IEI funding and school construction projects, including both new school construction and major renovations. The plan will also take into consideration the connection of schools to the Internet to ensure that all schools are connected by early 1999. An additional $2 million of funding supports this objective.

When a board submits its proposal for sequencing schools, it will be reviewed to make sure that it is consistent with the guidelines of the IEI project including the emphasis on ensuring all secondary students have access to the technology, community access to the equipment and connectivity for all schools. Funding for the project also includes $3 million for LAN and electrical wiring and $3.8 million for technical support which will be transferred to school boards over the three years. The Department will also expand EDnet to accommodate the additional schools.

Technology and teaching: The introduction of IT into the education system requires not only a new infrastructure but professional development of teachers. The real challenge in PD for this new technology is not on how to operate the equipment but on how we use it to improve instruction. This is reinforced by the document *Vision of Learners in the 21st Century* developed for Industry Canada's SchoolNet Advisory Board in 1996 by a group of educators from across the country. In that document it is observed that "communication and information technologies are transformational technologies with powerful impacts on society and profound implications for learning and learning systems." The paper posits a vision of a new learning system for the future which involves changes in all the interconnected elements of the system brought about in substantial measure by the impact of information technology. Further, it is stated that:

> *Our learning structures and institutions - from preschool to university - are enhanced and extended by forming links and partnerships within the formal education community (e.g. with other schools) and with institutions, enterprises and associations outside the formal system (e.g. cultural institutions, media, business, community groups). The boundaries dividing school, work and community continue to dissolve and their activities mutually reinforce one another.*

All of this puts a burden on teachers already loaded with curriculum and structural changes. However, it also affords enormous potential to transform the education system into one that truly reflects the needs of each individual student and opens the doors to electronic contact with the entire world in an unprecedented fashion. Much of this vision has already been identified in the draft document "*Vision for the Integration of Information Technologies Within Nova Scotia*

Public School Programs" cooperatively developed by the Departments of Education in Nova Scotia and Alberta.

Over the three years of the project, the Department plans for a $3 million program of PD focused on IT. This will be complemented by intensive summer programs for key support teachers at each school. IT industry mentors and knowledge economy internships are being explored. These initiatives will strengthen the partnership between schools and the business community and assist in developing the expertise of a key group of teacher about the implications of the knowledge economy.

An Advisory Committee on Professional Development and Curricular Linkages will be established for the project. In addition to school board staff, this committee will have representation from Nova Scotia Teachers Union and from the faculties of education at universities. The role of the committee is to provide advice on the use of the technology across the curriculum, on the professional development programs that are to be funded under this project and on software development projects that will be undertaken through the IEI. A total of $2 million has been allocated as a seed fund for software development. The committee will work closely with both curriculum and technology staff from the department and boards and will also ensure that issues such as assistive technology for students with special needs are addressed.

Community access and partnerships: A key component of the project is the development of partnerships with the local community. Each school board now has staff responsible for technology and for community/education partnerships. These staff will be key players in developing a long-term access strategy by linking with regional development agencies, the Community Business Corporation, field staff of the Community Economic Development Division of EDT and the Adult Learning and Innovation Division of Education. These sources will assist them in developing plans to ensure meaningful community access and the development of appropriate programs for adult learners. It will also ensure the appropriate involvement of community development agencies in the process.

Links will also be developed with Community Access (CAP) sites, to emerging community networks and to the Integrated Wide Area Network partnership with MT&T. The Department of Education and Culture will work with the Department of Business and Consumer Services and others to develop a core set of Internet based services for public access through schools. Access will be provided during evening, weekends, and in the summer in addition to regular school hours.

Expected results: The initiative will result in the purchase of computers, software, accessories and services costing over $38 million. This will stimulate the growth of IT-based service companies in Nova Scotia. The project will provide a school-based training facility in more than 100 communities across the province. These centres will provide training which is accessible to every Nova Scotian and within easy access of their home or business.

As the result of this project, the following educational benefits will be realized.

- Students will acquire the knowledge, skills, and attitudes regarding information technology they require for the workplace and to pursue advanced studies. These will be based on the IT outcomes framework recently developed by the Department of Education and Culture which identifies IT related competencies across the curriculum.

- Students in small rural schools will get significantly enhanced access to specialized high school courses through distance education supported by information technology. The critical mass of computer equipment in schools will make it feasible to support the conversion of the public school curriculum, particularly at the secondary level, to a format which can be delivered through computers and multimedia platform.

- Teachers will be able to develop their IT related skills by having direct access to computers and Internet in their schools and through the training provided as part of the project. This will allow them to be able to support student acquisition of technology skills and to play a leadership role in the community in demonstrating applications of IT and supporting community access.

- All schools will be connected to the Internet by early 1999 and all students and teachers will have E-mail accounts. In addition, the Department will work with schools receiving funding under the IEI initiative to ensure that Grassroots Projects are developed to contribute to SchoolNet and that quality is maintained in the projects.

As the result of this project, the following community development benefits will be realized.

- The public across the province will receive increased access to education and training opportunities focused on information technology skills. Schools will also be encouraged to develop partnerships with community agencies to provide multimedia computer software which can be used to provide literacy and academic upgrading.

- Local businesses, particularly in rural areas, will be provided training programs to develop workers' information technology skills. Schools and the Centre for Entrepreneurship Education and Development will work with the local business community to assist businesses starting up and existing businesses to explore new uses for information technology including the Internet.

- The public will receive greatly enhanced access to government and other information and services provided through the Internet. The Department of Education and Culture and the Department of Business and Consumer Services will collaborate to extend the reach of BCS service centres to up to 100 schools across the province. A "user-friendly" WWW page on the Internet will be developed to guide users to government information and services.

- The NS educational software industry will be directly stimulated by having an installed base of computers sufficiently large to justify the development and testing of new computer and Internet based educational projects for use in local schools and for export. The curriculum initiatives currently being undertaken through the Atlantic Province Education Foundation are a particularly attractive product. This provides exciting potential for both the private sector and educational institutions in the province to export education and training services, based on the NS curriculum, over the Internet.

PROJECT COST

Startup (over 3 years):

Computers and software	$ 20,500,000
Wiring (LAN, electrical, etc.)	3,000,000
Technical support	3,800,000
Professional development	3,000,000
Software development	2,000,000
Connectivity support	2,000,000
Telecommunications (school board contribution)	2,000,000
Technology recycling	347,016
Other (Department led PD & tech. support & in-kind)	1,510,127
TOTAL	**$ 38,157,143**

After contributing $12 million to startup costs (plus .8 million in-kind) over three years, the Department of Education and Culture intends to maintain an annual amount of $6 million in its budget for technology refresh and technical support. This will allow the equipment purchased to be replaced on a five year cycle. This is, of course, subject to budget approval. School boards will be responsible for on-going Internet and professional development costs.

Annual costs (after year 3):

Technology refresh - based on 5 year cycle	$ 4,000,000
Technical support	2,000,000
Connection to Internet (board responsibility)	600,000
Professional development (board responsibility)	500,000
TOTAL	**$ 7,100,000**

PROJECT MANAGEMENT

Under the Economic Diversification Agreement, the overall initiative will be managed by the IEI Council with representation from the Technology and Science Secretariat, Department of Education and Culture, Economic Development and Tourism, the Atlantic Canada Opportunities Agency, HRDC and Industry Canada. The Council will ensure that implementation supports the objectives outlined and the Diversification Agreement. School boards will be asked to report on the implementation of their components of the project including the use of IT across the curriculum to support learning, the development of technology skills in students, partnerships developed with the community and business sector, and the success in providing meaningful access to the community.

The Department will manage the schools component and the RFP process for computer tendering. School boards will have direct responsibility for wiring - both electrical and LAN - with funding under the IEI. This will allow those boards to desire to do so to begin wiring schools this summer. The funding for professional development and technical support will be phased in conjunction with various activities at the school board level, in particular, the arrival of the computers.

The Department of Education and Culture has set up working groups to oversee various aspects of the project. The first is a School Project Management Committee to coordinate the implementation in the education system. Membership includes representation from the Department of Education, all school boards and the Technology and Science Secretariat. The second main working group will be the Professional Development and Curricular Linkages Advisory Committee. It will include representatives of the Department of Education and Culture, regional school boards, Nova Scotia Teachers Union and universities.

Other working groups will be established as necessary. For instance, committees concerned with technical support and research will likely be necessary. The community access component of the project will be coordinated across government by a committee tieing together the schools and CAP initiatives. Throughout the process consultation will be undertaken with partners from the two levels of government and the education system. In addition, the business community will be engaged to ensure an appropriate flow of information regarding IT and knowledge economy issues.

TIME LINE

The time for various critical stages is evolving. However, the current plan is as follows.

May 29, 1998	Project was announced
June - July	Board planning and draft RFP
August	Stage 1 RFP released
July - August	Wiring in schools started
September	Stage 1 RFP submissions reviewed
October	Short-list of vendors announced
November	Stage 2 tenders evaluated
February, 1999	Connectivity achieved in all schools
May	Successful vendor announced
June	Equipment installation starts